

We claim

1. A method for producing a high titer reassortant influenza virus comprising transfecting host cells with expression plasmids containing the PB2, PB1, PA, NP and M genes from the A/PuertoRico/8/34 influenza strain, the NS gene from the A/England/1/53 influenza strain and the HA and NA genes from an influenza virus of interest other than A/England/1/53, to obtain a high titer reassortant influenza virus.
2. The method of claim 1 wherein the NS gene encodes a NS1 protein having the sequence set forth in SEQ ID NO: 3 and the NS2 protein having the sequence set forth in SEQ ID NO: 4.
3. The method of claim 1 wherein the NS gene encodes a NS1 protein having the sequence set forth in SEQ ID NO: 3 having one or more changes selected from the group consisting of an amino acid substitution at positions 21, 58, 60, 127, 174, or 189 and a deletion of amino acids 231-238 and a NS2 protein having the sequence set forth in SEQ ID NO: 4 having one or more changes selected from the group consisting of an amino acid substitution at positions 16, 31, 86, or 107.
4. The method of claim 3 wherein the substitution of the NS1 protein (SEQ ID NO: 3) at position 21 is Gln to Arg, at position 58 is Thr to Ile, at position 60 is Val to Ala, at position 127 is Asn to Ser, at position 174 is Val to Ile, and at position 189 is Asp to Asn.
5. The method of claim 3 wherein the substitution of the NS2 protein (SEQ ID NO: 4) at position 16 is Met to Ile, at position 31 is Met to Ile, at position 86 is Lys to Arg, and at position 107 is Phe to Leu.
6. The method of claim 1 wherein the NS gene encodes a NS1 protein having the sequence set forth in SEQ ID NO: 5 and the NS2 protein having the sequence set forth in SEQ ID NO: 6.
7. The method of claim 1 wherein the NS gene has the sequence set forth in SEQ ID NO: 1.
8. The method of claim 1 wherein the NS gene has the sequence set forth in SEQ ID NO: 2.

9. The method of claim 1 wherein said host cells are mammalian cells.
10. The method of claim 9 wherein said mammalian cells are selected from the group consisting of cells approved for use in humans.
11. The method of claim 10 wherein said mammalian cells are Vero cells.
- 5 12. The method of claim 1 wherein said influenza virus of interest is selected from the group consisting of human, avian, swine and equine.
13. A reassortant influenza virus strain comprising a modified A/PuertoRico/8/34 influenza strain, wherein the NS gene of the A/PuertoRico/8/34 influenza strain is replaced with the NS gene from the A/England/1/53 influenza strain and the HA and NA genes from an influenza virus strain of interest.
- 10 14. A method of producing a reassortant influenza virus vaccine comprising transfecting cells with expression plasmids containing the PB2, PB1, PA, NP and M genes from the A/PuertoRico/8/34 influenza strain, the NS gene from the A/England/1/53 influenza strain and the HA and NA genes from an influenza virus of interest, to obtain a reassortant influenza virus vaccine.
- 15 15. A reassortant influenza virus vaccine comprising a modified A/PuertoRico/8/34 influenza strain and a pharmaceutically acceptable carrier, wherein the NS gene of the A/PuertoRico/8/34 influenza strain is replaced with the NS gene from the A/England/1/53 influenza strain and the HA and NA genes from an influenza virus strain of interest.
- 20 16. The vaccine of claim 15, further comprising an adjuvant which enhances an influenza virus immune response.
17. A kit for producing an influenza virus master strain comprising expression plasmids containing the PB2, PB1, PA, NP and M genes from the
- 25 A/PuertoRico/8/34 influenza strain and the NS gene from the A/England/1/53 influenza strain.
18. A modified A/PuertoRico/8/34 influenza virus master strain, wherein the PB2, PB1, PA, NP and M genes are from the A/PuertoRico/8/34 influenza strain, the NS gene is from the A/England/1/53 influenza strain and the HA and NA genes are from any influenza virus.
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19. A method of producing a reassortant influenza virus comprising infecting a host cell with the influenza virus master strain of claim 18 and an influenza virus of interest, wherein the genes from the master strain and the virus of interest reassort in the host cell to produce a different virus strain.
- 5 20. The method of producing a reassortant influenza virus according to claim 19 wherein the HA and NA genes are from any influenza virus other than A/England/1/53.
21. An A/PuertoRico/8/34 master strain used for producing an influenza virus, the improvement which consists of replacing the NS gene of the A/PuertoRico/8/34 influenza strain with the NS gene from the A/England/1/53 influenza strain.
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